

APRIL/MAY 2024

**23PCS11 — ANALYSIS AND DESIGN OF
ALGORITHMS**

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. State the criteria to be satisfied by an algorithm.
2. Define queue.
3. What is traversal of a tree?
4. List the techniques of graph traversal.
5. Mention any two problems that can be solved using greedy technique.
6. Define single source shortest path.
7. Define dynamic programming.
8. Define all-pairs shortest path problem.
9. Write any two problems that can be solved using backtracking technique.
10. Define the branch and bound method.

SECTION B — ($5 \times 5 = 25$ marks)

Answer ALL the questions.

11. (a) Write a short note on recursive algorithms.
- Or
- (b) Write the properties of binary search tree.
12. (a) Explain the pre-order traversal of a tree with appropriate algorithm.
- Or
- (b) Describe how will you implement binary search using divide and conquer approach.
13. (a) Explain Knapsack problem.
- Or
- (b) Explain Greedy algorithm with an example.
14. (a) Explain 0/1 Knapsack problem.
- Or
- (b) Write a short note on flow shop scheduling.
15. (a) Explain the sum of subsets problem.
- Or
- (b) Write a short note on Hamiltonian cycle.

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Define Graph. Explain the various representations of a graph with an example.
17. Explain divide and conquer strategy with an example.
18. Discuss Prim's algorithm.
19. Discuss optimal binary search trees.
20. Discuss traveling salesperson problem using branch and bound method.
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